MPG 7100.1
REVISION B
EFFECTIVE DATE: December 23, 2002
EXPIRATION DATE: December 23, 2007

MARSHALL PROCEDURES AND GUIDELINES

DE01

PROPOSAL DEVELOPMENT PROCESS

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		8/4/00	Document details the process for developing proposals for the Center.
Revision	A	4/18/01	Document revised to strengthen procedures for satisfying customer requirements per ISO 9001:2000 standard implementation.
Revision	B	12/23/02	Removes references to the MSFC Program Management Council (PMC) cost and workforce thresholds. Defines tailoring options. Requires MSFC PMC approval to start proposal development or Directorates may approve proposal development “at-risk” prior to MSFC PMC approval. Added directorate checklists to aid proposal teams in determining the type and amount of support required during the life cycle of a proposal. Responsibilities were moved from the procedure section to the responsibilities section. Definitions were moved from the procedure section to the definition section. Specified concurrence and approval signatures.

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PREFACE

P.1 PURPOSE

This Marshall Procedures and Guidelines (MPG) formulates a Centerwide process that will enable the Marshall Space Flight Center (MSFC) to prepare proposals that will win new work in a competitive environment. This process shall help ensure that MSFC proposals address customer requirements with the aim of enhancing customer satisfaction.

P.2 APPLICABILITY

a. This MPG defines the process to be used for all new work opportunities that relate to a program, project or activity as defined by MPG 7120.1, that provide aerospace products and capabilities (PAPAC), when preparation of a proposal is required. PAPAC is defined by NPG 7120.5. This procedure is applicable to all MSFC organizational elements. Any deviations to the Marshall Management System (MMS) will be processed in accordance with MPG 1410.2

b. Tailoring of this document is allowed. Tailoring requests shall be documented in writing to the MSFC Program Management Council per MPG 7120.4. The tailoring request shall obtain approval from the MSFC PMC. The MSFC PMC decision to allow tailoring shall be recorded in the MSFC PMC meeting minutes.

c. The procedures of this Directive do not apply to the following special processes:

(1) Space Act Agreements which are governed by NPD 1050.1, NPG 1050.1, and MWI 1050.3.

(2) Research and Technology Objectives and Plans (RTOPs).

(3) The Center Director's Discretionary Fund (CDDF). CDDF proposals are governed by the “Center Director’s Discretionary Fund Guidelines and Procedures.”

(4) When MSFC teams with another NASA organization on a proposal to be released from that Center, the other organization’s proposal guidelines will be followed.

(5) Activities documented by task agreements in support of an industrial partner’s proposal, when the industrial partner is preparing the proposal.

d. This MPG does not contain procedures for new work activities past the point of award, such as negotiations.

P.3 AUTHORITY

MPD 1150.1, Charter MC-08, "MSFC Program Management Council”

P.4 APPLICABLE DOCUMENTS

a. MPG 1050.1, “Contract (Customer Agreement) Review”

b. MPG 1230.1, “Center Resources Management Process”

c. MPG 1410.2, “Marshall Management Directives System”

d. MPG 1440.2, “MSFC Records Management Program”

e. MPG 7120.1, “Program/Project Planning”

f. MPG 7120.4, “MSFC Program Management Council (PMC) Process”

g. NPG 7120.5, “NASA Program and Project Management Processes and Requirements”

P.5 REFERENCES

a. MWI 1050.3, “Policy and Authority to Take Actions Related to Reimbursable and Nonreimbursable Space Act Agreements”

b. NPD 1050.1, “Authority To Enter Into Space Act Agreements”

c. NPG 1050.1, “Space Act Agreements”

P.6 CANCELLATION

MPG 7100.1A dated April 18, 2001

Original signed by
Axel Roth for

A. G. Stephenson
Director

DOCUMENT CONTENT

1. DEFINITIONS

1.1 Champion. Individual identified as the advocate of the new work opportunity. The person responsible for the technical content of the proposal and is committed to the concept being proposed.

1.2 Collaborative Work Commitment (CWC). A resources agreement between the performing organization and the requesting organization for the next fiscal year.

1.3 Core Team. The Core Team is responsible for supporting the Proposal Manager in developing the proposal. The Core Team is comprised of personnel with technical, programmatic, and cost expertise, and includes the selected Project Team. The core team may be a single person.

1.4 Positioning. Interfacing, as early as possible, with potential customers to establish contacts and credibility, assist in defining technical and programmatic parameters of upcoming solicitations, determine any political discriminators, and establish “win themes.”

1.5 Process Owner. The person responsible for the new work acquisition and proposal development process, serves as the Office of Primary Responsibility (OPR) for this document, and is the Center’s focal point for managing and directing the process.

1.6 Project Team. The Champion and selected individuals and organizations that have the capability to provide the proposed product and/or service. The Champion selects this team. The project team may be a single person.

1.7 Proposal. The document that details a proposed activity in response to a customer request or a perceived customer need. The document includes specific details of the activity as well as the resources required to perform the activity.

1.8 Proposal Manager. The individual responsible for establishing the overall proposal content and the publication of a consistent, high-quality proposal that outlines a project that meets the requirements specified by the customer.

1.9 Purple Team. Provides an independent initial review of the proposal content. The review evaluates the proposal’s adequacy of technical content, clarity, themes and strategies, and

responsiveness of the proposal. The Purple Team ensures the proposed project meets the customer's technical requirements. The Purple Team is composed of experts from each technical discipline that the proposal taps, overall systems experts for technical area, program control experts, cost estimating experts from the Systems Management Office (SMO) (for flight system proposals), and representatives from partners as appropriate.

1.10 New work opportunity. All work not contained in the MSFC baseline operating budget (labor and dollars), whether internally or externally generated. This includes, for example, work resulting from formal Requests for Proposals (RFPs), Announcements of Opportunity (AOs), NASA Research Announcements (NRAs), Cooperative Agreement Notices (CANs), as well as reimbursable work from NASA Headquarters, other NASA Centers, other Government agencies, industry, and academia.

1.11 Red Team. Provides the final review of the finished proposal. The team evaluates the proposal much like the customer's evaluation board. The Red Team evaluates the proposal to ensure compliance with the solicitation, consistency, accuracy, completeness, and persuasiveness. This review establishes proposal strengths and weaknesses and a prioritized list of recommendations for reducing or eliminating weaknesses. The red team is comprised of independent experts who are intimately familiar with the engineering technology or science objective being presented, management and organization approaches, and able to evaluate the relevancy of resource/cost data submitted. A team member should be familiar with management and organization approaches; and a team member should be able to evaluate the relevancy of resource/cost data to be submitted. A representative from the MSFC Safety and Mission Assurance Office (S&MA) is mandatory for proposals that involve flight hardware.

1.12 Strategic Planning Agreement (SPA). A multi-year resources planning agreement between the requesting organization and the Center's Senior Management Council referenced in MPG 1230.1.

2. RESPONSIBILITIES

2.1 Champion is responsible for:

2.1.1 The systems engineering planning necessary for the proposal to demonstrate that the mission objectives can be met within cost and schedule constraints;

2.1.2 Positioning the proposal to win;

2.1.3 Aligning content (technical and programmatic) to meet the customer needs;

2.1.4 Developing a technical approach that addresses the customer requirements;

2.1.5 Preparing a comprehensive self-assessment package;

2.1.6 Supporting debriefings for customer feedback, and compiling lessons learned;

2.1.7 Serving as Principal Investigator, Proposal Manager, and/or key Technical Manager;

2.1.8 After award, may continue to be involved as either Principal Investigator, Project Manager, or key Technical Manager;

2.1.9 Recommending a budget for the opportunity;

2.1.10 Researching competitor capabilities;

2.1.11 Establish team members for the core team, purple team and red team;

2.1.12 Maintaining the final edition of the proposal as a quality record.

2.2 Core Team is responsible for:

2.2.1 Developing the proposal to a level of detail commensurate with procurement requirements;

2.2.3 Conducting in-line reviews of the entire proposal throughout the proposal development process.

2.3 Directorate New Business Point of Contact (POC) is responsible for:

2.3.1 Leading the Directorate’s new business planning process;

2.3.2 Establishing and tracking new business metrics for the Directorate;

2.3.3 Researching new business opportunities and communicating to Directorate management;

2.3.4 Compiling integrated outstanding resource commitments for the Directorate;

2.3.5 Coordinating the Directorate's proposal resource requirement projections with the Process Owner;

2.3.6 Briefing management on new work status;

2.3.7 Coordinating the Proposal Manager development training process;

2.3.8 Managing Directorate positioning efforts and the B&P/IR&D budgets;

2.3.9 Assisting the Champion in positioning for the win;

2.3.10 Supporting the Champion by identifying individuals with appropriate expertise for Core Team and Purple Team and Red Teams;

2.3.11 Communicating process capabilities to potential customers;

2.3.12 Compiling lessons learned and providing them to the Process Owner.

2.4 Lead Directorate (for specific opportunities under the purview of the Directorate) is responsible for:

2.4.1 Taking the lead role in coordinating with other directorates for proposal development at the Center (including engineering support, S&MA support, procurement support, facility usage, Information Technology requirements, training requirements, etc);

2.4.2 Conducting bid/no bid reviews;

2.4.3 Approving the proposed budget for the activity.

2.5 MSFC Program Management Council (PMC) is responsible for:

2.5.1 Providing or withholding authority to proceed with proposal development;

2.5.2 Approving/disapproving requests for commitment of MSFC resources for new work opportunities to complete the formulation phase.

2.6 Process Owner is responsible for:

2.6.1 Maintaining the MPG document that defines the proposal development process;

2.6.2 Creating metrics, evaluating the process, incorporating lessons learned from each proposal effort, and disseminating lessons learned to improve future efforts;

2.6.3 Communicating the process capabilities to potential customers;

2.6.4 Supporting the Directorates in planning for process resources requirements to facilitate proposal efforts;

2.6.5 Working with the Customer and Employee Relations (CaER) Directorate to coordinate new work development and proposal development training initiatives;

2.6.6 Ensuring the availability of tools (e.g., collaborative engineering center, technical publications, graphics, war rooms, electronic meeting system) to the proposal developers as required by the directorates;

2.6.7 Establishing and maintaining expertise in the new work development and proposal development fields;

2.6.8 Briefing management on the proposal development process status;

2.6.9 Assisting the core team throughout the proposal development process in acquiring Just-in-Time training, scheduling war rooms and reviews, and in the acquisition of proposal proficiency skills as required.

2.7 Proposal manager is responsible for:

2.7.1 Establishing a proposal schedule;

2.7.2 Making assignments for book development;

2.7.3 Deriving a requirements matrix for solicitation and ensuring proposal compliance to customer requirements;

2.7.4 Coordinating review teams;

2.7.5 Coordinating the proposal outline;

2.7.6 Managing war rooms and storyboards for a specific proposal effort;

2.7.7 Communicating with customer in debriefings and receiving customer feedback;

2.7.8 Compiling lessons learned and providing them to the Process Owner.

2.8 Purple team is responsible for:

2.8.1 Performing a technical review of the proposal to ensure the scope of coverage is sufficient to satisfy customer requirements;

2.8.2 Identifying and assessing technical risk in proposal;

2.8.3 Performing a detailed review of proposal WBS to ensure completeness of required tasks;

2.8.4 Performing a review of cost estimates, schedule and their phasing;

2.8.5 Advising on ways to increase salesmanship in proposal;

2.8.6 Evaluating the proposal adequacy of technical depth, clarity, coherence, responsiveness to the solicitation, and win themes and discriminators;

2.8.7 Validating technical and managerial approach.

2.9 Red team is responsible for:

2.9.1 Establishing that the proposal scope covers all requirements of the solicitation;

2.9.2 Ensuring the approach to addressing the requirement is responsive to the stated evaluation criteria;

2.9.3 Ensuring the content is organized to be easy to find, consistent with instructions, presented in an easy-to-follow format, and is fully consistent in all its parts (i.e. technical content is fully supported by the cost proposal);

2.9.4 Providing a consensus report with recommendations on major points;

2.9.5 Assessing the technical capabilities of MSFC, described in the proposal, to assure that MSFC can meet the customer requirements;

2.9.6 Establishing proposal strengths and weaknesses and a prioritized list of recommendations for reducing or eliminating weaknesses;

2.9.7 Assess proposal consistency, completeness and persuasiveness.

3. PROCEDURE

(Step numbers refer to blocks in the accompanying flowchart.)

Note 1: This process step is a requirement that shall not be tailored.
Note 2: This process step may be tailored per paragraph P.2.b
Note 3: This process step is considered a guideline.

Actionee	Step	Action
Directorates	3.1	*New Work Approval* - The new work opportunity is reviewed consistent with the guidance provided in MPG 7120.1, “Program/Project Planning.” (see note 1) The directorate shall submit to the MSFC PMC secretary the form titled, “Requesting the MSFC PMC for Authority to Proceed with Proposal Development” located in MPG 7120.4. (see note 1) The request will be considered approved by the MSFC PMC if it is not disapproved within 30 days of submission to the MSFC PMC secretary. Directorates may proceed “at risk” during this 30 day period with the written approval of the involved directorate. When proposal development for the new work opportunity is approved and a proposal is required, the proposal development process begins.
Champion	3.2	Establish the membership for the core team, purple team, and red team. (see note 1)

Core team	3.3	Start preparing the proposal. With support from *ad hoc* experts as needed, the core team defines discriminators, win themes, benefits to the customer, etc., consistent with the draft solicitation and customer input. The draft solicitation is analyzed to define the requirements matrix, proposal outline, Work Breakdown Structure (WBS), cost, schedule, and project plan. The proposal design shall ensure it addresses the customer requirements. These requirements may include those specified by the customer, those not stated by the customer but necessary for use, statutory and regulatory requirements, and any additional requirements determined by MSFC. (see note 1)
Proposal manager		The proposal manager shall develop a timeline for proposal development. Feedback is provided to the customer on elements of the draft solicitation that may be improved. (see note 1)
Core team		Appendix A contains a general checklist and directorate-specific checklists to assist the core team in determining the amount and type of Center resources that will be required during the life cycle of the proposal (if selected). When Center resources listed in Appendix A are required, the type and level of resources shall be fully coordinated with the affected Directorates. (see note 3) Appendix B contains schedule and cost considerations that should be considered when preparing a proposal. (see note 3)
Proposal manager	3.4	Organize and compile the raw data and key concepts into a proposal storyboard or electronic outline. Mockups may be produced if necessary. A dedicated "war room" can be made available for this activity throughout the proposal development phase. Alternatively, this step can be accomplished electronically, especially when the participants are in remote locations. (see

		note 1) The proposal manager may decide to stop proposal development based on this step (e.g. a win strategy cannot be defined). Report this decision to the MSFC PMC secretary.
Purple team	3.5	The purple team conducts a stringent review. The purple team review focuses on technical merit and clarity, consistency with win themes and responsiveness to the solicitation. (see note 2) The findings of the purple team review are documented and made available to the core team and for the red team review. (see note 2)
Lead directorate		The lead directorate may decide to stop proposal development based on the purple team review (e.g. a win strategy cannot be defined). Report this decision to the MSFC PMC secretary.
Core team	3.6	A rough draft of the proposal is prepared and submitted to the proposal production personnel. (see note 1)
Core team	3.7	The core team checks the responsiveness of the rough draft proposal to solicitation requirements. (see note 1)
Red team	3.8	The red team simulates the customer Source Evaluation Board (SEB) and performs an evaluation much as the customer will do. This review examines the proposed project relative to the customer requirements. Red team findings are provided to the core team. (see note 2)
Lead directorate		The lead directorate may decide to stop proposal development based on the red team review (e.g. a win strategy cannot be defined). Report this decision to the MSFC PMC secretary.
Core team	3.9	Prepare the final draft by incorporating the red team findings. (see note 1)

Champion	3.10	Present the content of the final proposal draft to the MSFC PMC. The presentation content is defined by MPG 7120.4 in the Appendix titled, “Requesting the MSFC PMC for Commitment of Resources for the Formulation Phase”. (see note 1)
Champion	3.11	If the MSFC PMC authorizes commitment of MSFC resources, the final edition of the proposal is completed and submitted to the proposal production personnel. (see note 1) If the MSFC PMC does not commit MSFC resources, the proposal effort is terminated
Champion, proposal manager, Director lead directorate, Director, Systems Management Office	3.12	Sign concurrence sheet for the proposal. (see note 1)
Center Director		Signs the proposal as the approving authority (see note 1)
Champion		Submits the proposal to the customer. (see note 1)
Directorate new business POC	3.13	The lead directorate informs all involved organizations and the MSFC PMC secretary of the customer’s award decision. (see note 1)
Proposal manager	3.14	The proposal manager requests a debriefing from the customer for either a win or loss. The champion, process owner, proposal manager, directorate POC, and select core team members participate in the customer debriefings. The proposal manager, with consideration to the customer feedback gained during debriefings, develops lessons learned. (see note 3)
Process		The process owner incorporates lessons

owner		learned from the activity into the process, whether the proposal was selected for execution or not. (see note 1)
Directorate new business POC		The directorate new business POC reviews the lessons learned for applicability in the directorate. (see note 1)
Directorate new business POC	3.15	If awarded, the lead directorate ensures the MSFC Implementation Plan is updated in the next annual revision. The SPA and CWC's are updated to account for any additional resource requirements. Resource requirements are also submitted as part of the Program Operating Plan (POP). The program/project/activity will then follow the planning process within MPG 7120.1. The lead directorate is responsible for performing the work. A customer agreement between MSFC and the customer shall be developed and reviewed consistent with MPG 1050.1, "Contract (Customer Agreement) Review." (see note 1)

4. RECORDS

The final edition of the proposal is a quality record. The record will be maintained by the proposal champion for the duration of the activity and then destroyed or kept as a historical record, consistent with the guidelines in MPG 1440.2, "MSFC Records Management Program."

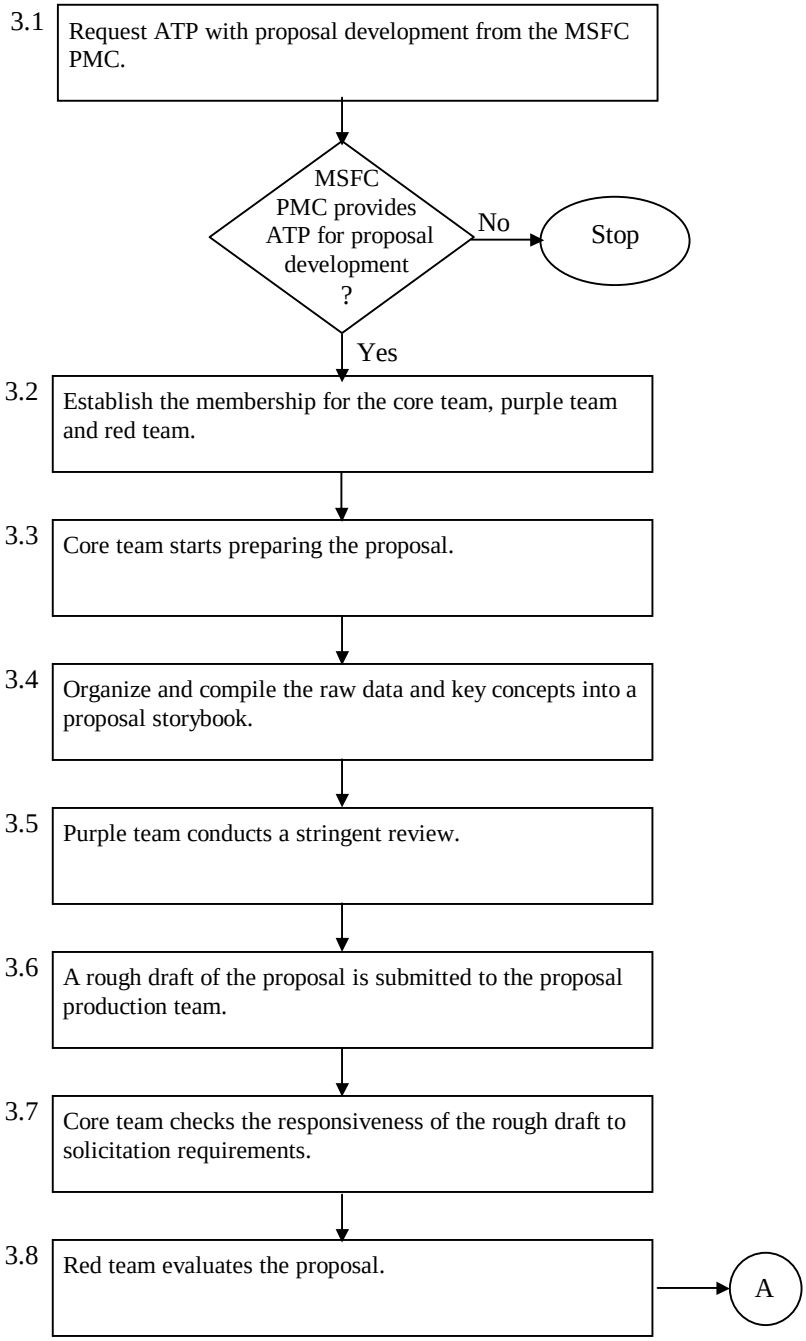
5. FLOW DIAGRAM

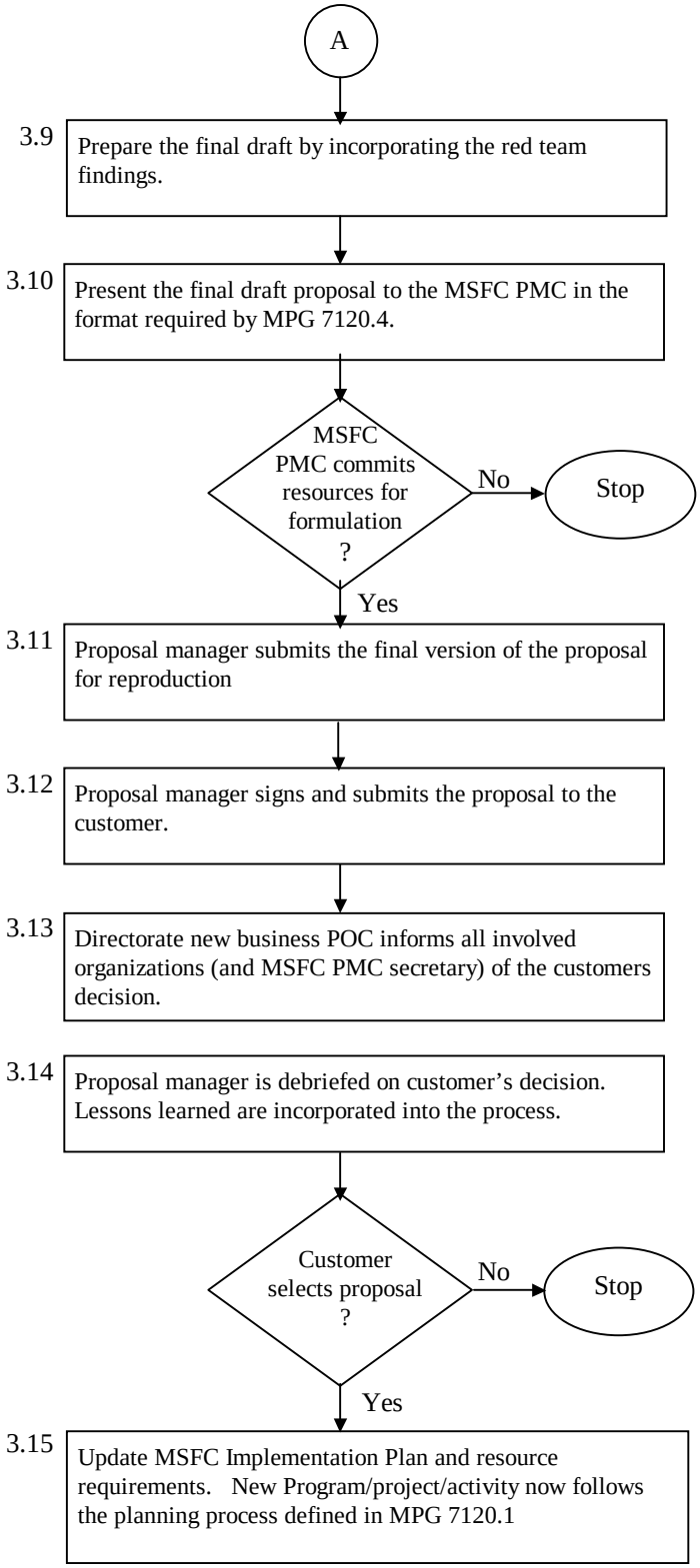
See following page.

PROPOSAL DEVELOPMENT PROCESS

(Flow Diagram sub-numbers correspond to procedure in Section 3.0)

Proposal Development Process (continued)

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3.9
Prepare the final draft by incorporating the red team findings.
3.10
Present the final draft proposal to the MSFC PMC in the format required by MPG 7120.4.
MSFC PMC commits resources for formulation ?
No
Stop
Yes
3.11
Proposal manager submits the final version of the proposal for reproduction
3.12
Proposal manager signs and submits the proposal to the customer.
3.13
Directorate new business POC informs all involved organizations (and MSFC PMC secretary) of the customers decision.
3.14
Proposal manager is debriefed on customer's decision. Lessons learned are incorporated into the process.
Customer selects proposal ?
No
Stop
Yes
3.15
Update MSFC Implementation Plan and resource requirements. New Program/project/activity now follows the planning process defined in MPG 7120.1

Appendix A – Proposal Development Checklists

A.1 General - The following general checklist items may drive MSFC civil service support levels and should be considered prior to reviewing the Directorate-specific checklists.

No	Yes	Requirement	Specify or Reference
Level of Project Penetration			
☐	☐	High level of technical risk	
☐	☐	o The current TRL must be increased	
☐	☐	o High degree of difficulty in advancing technology from the current TRL to the required TRL	
☐	☐	Performing organization has demonstrated its capabilities	
☐	☐	Processes are well defined	
☐	☐	Launch vehicle is human rated	
☐	☐	Project is highly visible	
☐	☐	Consequence of failure is severe	
☐	☐	High design complexity, high manufacturing complexity or producibility issues	
☐	☐	High value asset	
		Based on the above items, estimate the anticipated level of technical penetration by the Engineering Directorate and the Safety and Mission Assurance Office. o Level 0 – No penetration o Level 1 – Low penetration o Level 2 – Intermediate penetration o Level 3 – In-depth penetration o Level 4 – Total penetration	
☐	☐	In-House Project – MSFC Design & Build Effort	
☐	☐	Contracted Effort – With a Prime Contractor	
☐	☐	Firm Fixed Price (FFP) or Cost Plus Incentive Fee (CPIF) – may require a lesser degree of technical penetration	
☐	☐	Cost Plus Award Fee (CPAF) or Fixed Price Award Fee (FPAF) – may require significant technical insight.	

A.2 Engineering Directorate Proposal Checklist

No	Yes	Requirement / Needed Capability	Specify or Reference
Avionics Engineering			
☐	☐	Accelerometers o Lower g o Higher g	
☐	☐	Adaptive Control	
☐	☐	Aeroheating Flight Instrumentation	
☐	☐	Antenna Test Range	
☐	☐	Antennas	
☐	☐	Application Specific Integrated Circuit (ASIC)	
☐	☐	Artificial Intelligence Systems o Knowledge-Based Systems o Simulations Models	
☐	☐	Attitude Control	
☐	☐	Automation, Control and Application	
☐	☐	Avionics Subsystems and GSE Integration	
☐	☐	Batteries	
☐	☐	Cable and Connector Lab	
☐	☐	Circumnavigational Simulation Models (Guidance Navigation & Control)	
☐	☐	Command Decoding	
☐	☐	Communications o Audio Data Acquisition o Data Communications o Data Storage	
☐	☐	Communications Link Analysis	
☐	☐	Computer Aided Design (CAD) Interactive Systems	
☐	☐	Computer Aided Engineering (CAE)& Computer Aided Manufacturing (CAM) o Interactive Systems	
☐	☐	Computer Compilers (Concurrent/Parallel)	
☐	☐	Computer Networks	
☐	☐	Computer Systems Data Management	
☐	☐	Computer Vision Systems	
☐	☐	Contact Dynamics Simulation & Test	
☐	☐	Control & Sequencing	
☐	☐	Control Electronics	
☐	☐	Control Moment Gyros	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Correlation Trackers	
☐	☐	Custom Microcircuits ASIC	
☐	☐	Data Management	
☐	☐	Data Networks	
☐	☐	Digital Computer Systems	
☐	☐	Docking Simulators	
☐	☐	Electronic, Electrical, & Electromechanical (EEE) Parts o Development o Failure Analysis o Reliability Level Requirements o Selection o Testing	
☐	☐	Electrical Component Testing	
☐	☐	Electrical Integration o Avionics Architecture o Electrical Harnesses o Power Distribution & Load Control	
☐	☐	Electrical Networks	
☐	☐	Electrical Power	
☐	☐	Electromechanical Actuators	
☐	☐	Electronic Circuit Analysis	
☐	☐	Electronic Controls	
☐	☐	Electronic Materials	
☐	☐	Electronics Packaging and Layout o Electrical Interconnect Systems o Evaluation of Design Versus Manufacturing/Assembly Procedures o Flight & Ground Electronic Black Boxes/Systems	
☐	☐	Embedded Control Electronics	
☐	☐	Embedded Fiber Optic Techniques	
☐	☐	Engine Controllers	
☐	☐	Expert Systems	
☐	☐	Failure Analysis and Test	
☐	☐	Fault Tolerant Computers (Redundancy Management)	
☐	☐	Fault Tolerant Systems: Telerobotics	
☐	☐	Flight Audio/Video	
☐	☐	Flight Computer Systems	
☐	☐	Flight Data Speech Resolution	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Flight Data Speech Synthesis	
☐	☐	Focal Plane Array Signal Processing	
☐	☐	Fuzzy Logic	
☐	☐	Gas Detectors	
☐	☐	Gimbals	
☐	☐	Global Positioning System Guidance and Control Components/Systems	
☐	☐	Hazardous Materials Detection	
☐	☐	Horizon Sensors	
☐	☐	Humidity Sensors	
☐	☐	Hybrid Circuit Design, Development, and Analysis	
☐	☐	Imaging Research	
☐	☐	Inertial Sensors	
☐	☐	Infrared Detectors	
☐	☐	Infrared Thermography	
☐	☐	Instrumentation and Control	
☐	☐	Information Technology (IT) Security	
☐	☐	Laser Gyros	
☐	☐	Location Beacons	
☐	☐	Magnetic Levitation Systems	
☐	☐	Magnetometers	
☐	☐	Manipulators	
☐	☐	Mass Spectrometry in Manned Space Flight	
☐	☐	Monolithic Circuits	
☐	☐	Motors and Controllers	
☐	☐	Multi-Degree-of-Freedom Tables	
☐	☐	Neural Networks	
☐	☐	On-Board Science Data Systems	
☐	☐	Optical Sensors	
☐	☐	Optical Storage	
☐	☐	Optimal Control	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Passive EM Detectors o Plume Effects o Plume Observation and Analysis Techniques o Pressure Sensing o Proximity	
☐	☐	Photonic Systems	
☐	☐	Photovoltaic Devices/Solar Array	
☐	☐	Pointing/Navigation	
☐	☐	Pointing Systems	
☐	☐	Pointing Systems Magnetic Torquers	
☐	☐	Power Conditioning and Processing	
☐	☐	Power Electronics and Control	
☐	☐	Propulsion Control Software	
☐	☐	Radar	
☐	☐	Radar Altimeter	
☐	☐	Radar Tracking	
☐	☐	Radar Transponders	
☐	☐	Range Safety	
☐	☐	Range Safety Receivers/Decoders	
☐	☐	Ranging Systems	
☐	☐	Rate Gyros	
☐	☐	Reaction Wheels	
☐	☐	Real-time Software Operating Systems	
☐	☐	Receivers	
☐	☐	Remote and In Situ Sensing Techniques	
☐	☐	Rendezvous & Docking Systems	
☐	☐	Rendezvous & Docking Sensor	
☐	☐	Radio Frequency (RF)	
☐	☐	RF Beacons	
☐	☐	RF Combiners and Cables	
☐	☐	RF Command Systems	
☐	☐	RF Communication Systems	
☐	☐	RF Data Transmission & Receiving Systems	
☐	☐	Ring Laser Gyros	
☐	☐	Robotic Devices and Subsystems	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Robotics Simulations	
☐	☐	Robotic/Telerobotic Systems	
☐	☐	Sensing and Measuring Instrumentation o Acoustic o Displacement o Flow o Heat Flux o Liquid Level o Shock o Speed o Temperature o Vacuum o Vibration	
☐	☐	Signal Conditioning Electronics	
☐	☐	Simulations (Software)	
☐	☐	Simulations/Testing	
☐	☐	Smart Structures Adaptive Control	
☐	☐	Soft Computing	
☐	☐	Software Advanced Research	
☐	☐	Software Engineering	
☐	☐	Software Maintenance	
☐	☐	Software Metrics	
☐	☐	Software Requirements/Specifications	
☐	☐	Software Tools	
☐	☐	Solid State Device Research	
☐	☐	Spacecraft Data Management Systems	
☐	☐	Special Purpose Simulators	
☐	☐	Star Trackers	
☐	☐	Sun Sensors	
☐	☐	Switchgear, Power Controllers	
☐	☐	System Measuring and Feedback Circuitry	
☐	☐	Target Motion Systems	
☐	☐	Telemetry Systems	
☐	☐	Telerobotics	
☐	☐	Timing Devices	
☐	☐	Torquers	
☐	☐	Tracking Systems	
☐	☐	Transmitters	
☐	☐	Transponders	

No	Yes	Requirement / Needed Capability	Specify or Reference
Structures, Mechanics and Thermal Engineering			
☐	☐	Tumbling Satellite Capture System	
☐	☐	Ultraviolet (UV) Sensors	
☐	☐	Vibration Isolation Systems	
☐	☐	Video Systems	
☐	☐	Vehicle Control	
☐	☐	Vehicle Health Management (VHM)	
☐	☐	Virtual Research Center (VRC)	
☐	☐	Acoustics Emissions Test	
☐	☐	Adaptive Optics	
☐	☐	Adaptive Structures	
☐	☐	Airborne Support Equipment	
☐	☐	Biotechnology Experiment Design	
☐	☐	Collaborative Engineering Design & Analysis Room	
☐	☐	Component/System Quasi-Static Load	
☐	☐	Composite Materials Structural Design	
☐	☐	Design Optimization	
☐	☐	Fluid System/Component Design	
☐	☐	Fracture Mechanics and Fatigue Analyses	
☐	☐	Holographic Modal Test	
☐	☐	Hypervelocity Impact Protection Systems	
☐	☐	Interdisciplinary File Translation	
☐	☐	Large Structural Quasi-Static Load	
☐	☐	Mechanical System Design o Actuators (Small) o Deployment o EVA Tools o Latch/Hinges o Mechanisms o Sample Exchange Systems o Tether Systems o Translation Systems	
☐	☐	Microgravity Furnace Design	
☐	☐	Microgravity Payloads and Experiments	
☐	☐	Microgravity Vibration Characterization	
☐	☐	Micro/Nanotechnology Mechanisms	
☐	☐	Modal Analysis/Correlation	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Modal and Control Dynamics	
☐	☐	Modal Test Analysis	
☐	☐	Multi-Disciplinary Design & Analysis	
☐	☐	Non-Linear Dynamics	
☐	☐	Optical Sensing	
☐	☐	Optimization Analysis	
☐	☐	Probabilistic Analysis	
☐	☐	Pyrotechnic Shock Test	
☐	☐	Space Structures o Dynamic Data Analysis	
☐	☐	Static Structural Test Requirements	
☐	☐	Stress Analysis Technologies	
☐	☐	Structural Analysis	
☐	☐	Structural Design	
☐	☐	Structural Design Criteria	
☐	☐	Structural and Dynamics Test o Combined Environments- Thermal, Acoustic & Strength	
☐	☐	Structural Dynamics and Loads o Liquids Slosh Dynamics o Propulsion System/Component Analysis • Blisk Technology • Damping of Composites • Rotor Dynamics • Solid Rocket Motor Dynamics • Structural Dynamics Modeling	
☐	☐	Structural Modeling	
☐	☐	Structural Stability Analysis	
☐	☐	Structural Strength Test o Composite Structures Test o Cryogenics/Structural Test o Hazardous Structural Test o Hydraulic Loads o Hydrostatics and Pneumatic Pressure Loads o Instrumentation and Data Acquisition o Tensile Test Machines o Test Requirements • Super Lightweight Structures	

No	Yes	Requirement / Needed Capability	Specify or Reference
Thermal			
☐	☐	Aerogels • Environmental Test Facility (ETF) • Simulated Altitude • Simulated Launch De-pressurization • Thermal / Humidity • Thermal Vacuum	
☐	☐	Fluid Analysis	
☐	☐	Infrared Thermography	
☐	☐	Launch Vehicles o Tankage o Thermal Protection System (TPS)	
☐	☐	Payloads o Furnace Design/Analysis o Optical System Analysis o Solidification Analysis o Toxicology assessment	
☐	☐	Porous Media Thermal Analysis	
☐	☐	Propulsion o Ablative Analysis o Liquid Propulsion Thermal / Fluid Analysis	
☐	☐	Solid Propulsion Analysis	
☐	☐	Spacecraft o Manned • Active Thermal Control Systems o Unmanned • Active Thermal Control • Passive Thermal Control • Thermal Analysis • Thermal Control Hardware • Verification	
☐	☐	Thermal Development Facility (TDF)	
☐	☐	Vibration, Acoustic and Shock	
☐	☐	Vibration Testing	
☐	☐	Vibroacoustic Analyses o Component and System Testing o Component/Black Box Loads Analysis o Component Fatigue o Random Vibration Criteria	
☐	☐	Vibroacoustic Testing	
☐	☐	Viscoelastic Analysis	
Materials, Processes and Manufacturing Engineering			
☐	☐	Ablators o Cork, Application o Sprayable, Application o Trowelable, Application	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Acoustic Emission	
☐	☐	Alloys	
☐	☐	Analytical Chemistry	
☐	☐	Atomic Oxygen Characterization	
☐	☐	Atomic Oxygen Simulation	
☐	☐	Automated Welding Techniques(In Space and Ground)	
☐	☐	Automation and Robotic Systems	
☐	☐	Bearing Test	
☐	☐	Bonding	
☐	☐	Casting Technology	
☐	☐	Ceramics	
☐	☐	Ceramic Composite and Ceramic Testing	
☐	☐	Chemistry Laboratory	
☐	☐	Coatings o Thermal Management o Thermal Control o Vacuum Plasma Spray (Metals and Ceramics)	
☐	☐	Collaborative Engineering Work cell	
☐	☐	Combustion Research	
☐	☐	Composite Development o Applications o Fabrication Techniques: Filament Winding, Tape Wrapping, Laying, Curing, and Multidirectional Fiber Placement	
☐	☐		
☐	☐	Computed Tomography System	
☐	☐	Computers, Networks, and Process Control Systems	
☐	☐	Contamination Testing, Monitoring, and Control	
☐	☐	Corrosion Protection Systems	
☐	☐	Cryogenic Insulation Application	
☐	☐	Cryogenic Lubricant/Bearing Systems Development, Testing, and Analysis	
☐	☐	Electroplating and Surface Treating Processes Evaluation	
☐	☐	Environmental Effects	
☐	☐	Fabrication Services	
☐	☐	Failure Analysis (Incident Analysis)	
☐	☐	Flammability	
☐	☐	Friction Stir Welding	
☐	☐	High Temperature Composites	
☐	☐	High Temperature Sealant	
☐	☐	Hydrogen Embrittlement	
☐	☐	Hydrogen Test	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Lubrication Techniques	
☐	☐	Manufacturing Processes	
☐	☐	Manufacturing Services	
☐	☐	Material Usage Agreements	
☐	☐	Material Welding in Space	
☐	☐	Materials Diagnostic	
☐	☐	Materials Environment Test	
☐	☐	Materials & Processes Technical Information System (MAPTIS)	
☐	☐	Materials Replacement Technology	
☐	☐	Materials Specifications	
☐	☐	Mechanical Fasteners	
☐	☐	Mechanical Metallurgy Testing	
☐	☐	Mechanical Properties	
☐	☐	Metallics	
☐	☐	Metallurgical Evaluation of Structural Materials	
☐	☐	Metal Matrix Composites	
☐	☐	Metals Joining Techniques	
☐	☐	Meteoroid/Space Debris	
☐	☐	Nondestructive Evaluation Techniques	
☐	☐	Nonmetallic Materials R&T	
☐	☐	Nozzle Development	
☐	☐	Optical Coatings	
☐	☐	Optical Contamination	
☐	☐	Outgassing	
☐	☐	Particle Irradiation	
☐	☐	Particulate Monitoring	
☐	☐	Photon Pressure Measurement	
☐	☐	Physical Chemistry	
☐	☐	Plasma Environment Tribotester	
☐	☐	Plasma Physics	
☐	☐	Plasma Torch Test Bed	
☐	☐	Plastics	
☐	☐	Plating Research	
☐	☐	Polymers	
☐	☐	Precision Metrology Lab	
☐	☐	Pressure Infiltration Casting Laboratory	
☐	☐	Rapid Prototyping	
☐	☐	Reactive Materials Hazards Evaluation	
☐	☐	Robotic Water Blasting	
☐	☐	Selection & Control of Materials	
☐	☐	Shearography	
☐	☐	Solar Cell Irradiation	
☐	☐	Solid Fuel Mix/Cast	
☐	☐	Spacecraft Contamination	

No	Yes	Requirement / Needed Capability	Specify or Reference
☐	☐	Space Environments & Effects Testing	
☐	☐	Special Test Equipment Design	
☐	☐	Stress Corrosion Test	
☐	☐	Surface Cleanliness Inspection	
☐	☐	Test Fixture Design	
☐	☐	Tethers	
☐	☐	Thermo-Mechanical Processing	
☐	☐	Thermography	
☐	☐	Toxic Offgas Testing	
☐	☐	Transport and Thermodynamic Properties of Propellants, Pressurants, Hydraulic Fluids, etc	
☐	☐	Tribology	
☐	☐	Ultraviolet Effects	
☐	☐	Vacuum Plasma Spray Cell	
Engineering Systems			
☐	☐	Army-Navy Visual Innovations Laboratory (ANVIL)	
☐	☐	Electrical and Electronic Controls	
☐	☐	Electromagnetic Interference (EMI) Test Facility	
☐	☐	EMI & Electromagnetic Compatibility (EMC)	
☐	☐	Environmental Data Analysis Center Facility	
☐	☐	Ground Computer/Data Systems	
☐	☐	Human Factors/Human Engineering	
☐	☐	Interactive Graphics Systems	
☐	☐	Kinematics	
☐	☐	Lightning Protection	
☐	☐	Mass Properties Analysis	
☐	☐	Performance Analysis Modeling & Simulation	
☐	☐	Supportability	
☐	☐	Spacecraft Charging	
☐	☐	Space Environments o External Contamination Analysis o Ionizing Radiation o Meteoroids o Orbital Debris Tether Issues o Orbital Debris Survivability o Solar Activity	
☐	☐	Systems Communications	
☐	☐	Terrestrial Environments	
☐	☐	Engineering Technology Development Office	
☐	☐	Living With A Star (LWS)	
☐	☐	NASA Gossamer Technologies Development	
☐	☐	NASA Space Environments & Effects (SEE) Program	
☐	☐	Space Environments Testbed (SET) Project	

A.3 Safety and Mission Assurance Office Proposal Checklist

No	Yes	Requirement	Specify or Reference
QS01 - MSFC In Partnership with:			
☐	☐	Other NASA Centers	
☐	☐	Air Force/DOD	

☐	☐	Cost Plus Award Fee	
☐	☐	ITAR Security Concerns – Increased Costs for Security	

QS01 - Staffing Philosophy			
☐	☐	Utilization of “ALL” Civil Service Workforce	
☐	☐	Civil Service & Support Contractor Mixed S&MA Workforce	
☐	☐	Funding Available for S&MA Support Contractor	
☐	☐	Full Time Flight Assurance Lead Required / requested by Project	
☐	☐	S&MA Need to be Co-located with Program	
☐	☐	Need for Resident Office S&MA Support at Prime Contractor Location	
☐	☐	Defense Contractor Monitoring Agency (DCMA)Support – HQ Funds DCMA Support	

Man-rated Vehicle Program			
☐	☐	Full Qualification Program	
☐	☐	Proto-Flight	
☐	☐	Paper Study – No Hardware	
		Non-Man Rated Vehicle Program	
☐	☐	Full Qualification Program	
☐	☐	Proto-Flight	
☐	☐	Paper Study – No Hardware	
		X-Vehicle Program	
☐	☐	Full Qualification Program	
☐	☐	Proto-Flight	
☐	☐	Paper Study – No Hardware	
☐	☐	Orbital Flight – Increase S&MA Tasks	
☐	☐	Sub-Orbital Flight – Fewer S&MA Tasks	
☐	☐	Indemnification – Contractor Request That NASA Provide Coverage	
☐	☐	Orbital Debris Analysis & Design Mitigation for Orbital Flights	
☐	☐	Ground Lethality Studies at Range to assure Safe Trajectory	

No	Yes	Requirement	Specify or Reference
☐	☐	Cost included for Test/Launch Range S&MA Support	
☐	☐	Launch Site Safety Packages Required	
		Vehicle Control Regimes	
☐	☐	- Astronaut Control & Associated Safety and Training Requirements	
☐	☐	- Autonomous Control – Ability To launch & Land w/o Human Control	
☐	☐	Flight Termination System (FTS) – Required to 0 Thrust/0 Lift/Disperse Propellants to minimize Explosive yield on impact	
		QS01 Mission Success Criteria – Task Driver for S&MA (Safety/Reliability/ Redundancy Implications)	
☐	☐	0 Fault Tolerant for Mission Success	
☐	☐	1 Fault Tolerant for Mission Success	
		QS01 Flight Assurance Lead	
☐	☐	Flight Assurance Lead Needs to be Collocated with Program	
☐	☐	Coordinate all S&MA Support	
☐	☐	S&MA Admin Support for Program	
☐	☐	Provide CWC and AOA Inputs	
☐	☐	Lead Milestone Review Efforts	
☐	☐		
QS01 Reliability Engineering			
☐	☐	Failure Modes and Effects Analysis & Critical Items Lists	
☐	☐	Reliability Predictions Needed for Vehicle & Subsystems	
☐	☐	Limited life Items Concerns	
☐	☐	GIDEP ALERT Tracking along with HEI Funding	
☐	☐	Milestone & Design Reviews along with Trade Studies	
☐	☐	Risk Management Tasks	

No	Yes	Requirement	Specify or Reference
QS01 Maintainability Engineering			
☐	☐	Maintenance On Orbit – (Orbital replacement Unit ORU)	
☐	☐	Return to Earth for Maintenance – major safety Concern for Safeing	
☐	☐	No Maintenance Possible – (AXAF type craft or Geo-synchronous orbit)	
☐	☐	Extra Vehicular Activity (EVA) Required for Maintenance – (Significant Safety Impact/Human Factors/Neutral Buoyancy Training)	
☐	☐	New EVA Tools Must be Developed	
☐	☐	Parts Sparing Philosophy Drive the Number of Spares & S&MA Work	
QS01 Systems Safety Engineering			
☐	☐	STS – NSTS 1700.7 Safety Requirements and Certification Process	
☐	☐	Eastern and Western Range Safety (EWR 127-1) Safety Requirements and Certification Process	
☐	☐	STS Flight & Ground Safety Packages	
☐	☐	EWR Accident Risk Assessment Report (ARAR) Package	
☐	☐	Travel for Safety TIM’s and Reviews	
☐	☐	Software Safety Effort Required (Safety Assessments, Hazard Analysis, and Safety Reviews)	
☐	☐	Safety Involvement with Verification and Validation (V&V) effort to assure Hazard Report Closures	
☐	☐	Nuclear Safety Issues Requiring Special DOE/NRA Analysis & Approvals	
☐	☐	Milestone/Design Review Support	

No	Yes	S&MA Requirements - Continued	Specify or Reference
QS01 Industrial Safety Requirements			
☐	☐	In-House Projects, MSFC has Full responsibility	
☐	☐	On-Site Program has a Contractor with Safety Responsibility and MSFC/NASA Oversight	
☐	☐	Facility Modification Required for Project Requiring S&MA Support	
☐	☐	MSFC Facilities Planned for Integration and Testing Shall require Additional S&MA Support	
☐	☐	MSFC Test Facilities requires Standard Safety Support	
☐	☐	Prime Contractor Builds/Integrates /Test Hardware at Their Facility	
☐	☐	Hardware Transportation is the Responsibility of NASA	
☐	☐	Hardware Transportation is the responsibility of the Prime Contractor.	
☐	☐	Industrial Safety Plan Required if Dollar Value of Contract is over $500 K.	
☐	☐	Accident Mishap Reporting By NASA	
☐	☐	Accident & Mishap Reporting by Contractor	
☐	☐	Launch Site Safety Support (KSC/WSTF/VAFB/ETR)	
		QS01 Quality Assurance Engineering – Standard In-house Coverage	
☐	☐	Procurement Support	
☐	☐	Incoming Receiving and Inspection	
☐	☐	Bonded Storage Maintenance, Handling, and Packaging	
☐	☐	Parts Kitting for Manufacturing	
☐	☐	As-Built Parts List Maintenance	
☐	☐	Manufacturing Support	
☐	☐	Change Orders and Configuration Design/Design Control Tasks/Drawing Reviews for Inspect ability & Manufacturability	
☐	☐	Establish Mandatory Inspection Points (GMIPS) Using CIL’s for Manufactured Hardware.	
☐	☐	Generation of Certificates of Qualification (COQ’s)	
☐	☐	Generation of DCMA Letters Of Delegation (LODs)	
☐	☐	QA Support for Integration & Manufacturing	
☐	☐	QA Support for Vehicle Testing	

No	Yes	Requirement	Specify or Reference
☐	☐	QA Support for Functional Configuration Audits and Physical Configuration Audits (FCA/PCA)	
☐	☐	Acceptance Review Support	
☐	☐	Software QA Support	
☐	☐	Test Stand QA Support	
☐	☐	Launch Site Support	
☐	☐	Verification and Validation Support	
☐	☐	Control of Quality Record	
☐	☐	Training (Risk Management or SHE training)	
☐	☐	Process Controls	
☐	☐	Maintenance of Inspection, Measuring, Testing Equipment	
☐	☐	ISO 9001 Compliance Required	
		QS01 QA Prime Contractor Support	
☐	☐	Depending on Insight level, NASA QA shall assure Contractor QA Organization Compliance with the above listed “In-House” QA Tasks.	
☐	☐	QA Audits of Prime and Subcontractors	
☐	☐	NEQA Audits when Required	
☐	☐	Milestone Review Support	
☐	☐	Hardware Acceptance Reviews	
☐	☐	FCA/PCA as listed for In-House	
☐	☐	Launch Site Support	
☐	☐	Problem Resolutions	
☐	☐	Materials Traceability	
☐	☐	Non-Destructive Inspection (NDI)	
☐	☐	ISO 9001 Registration Needs to Occur as Part of the Contract Award	

A.4 Center Operations Directorate Proposal Checklist

No	Yes	Requirement (Unit of Measure)	Specify or Reference
AD10 Environmental Engineering Department Responsibilities			
☐	☐	Environmental-Releases to air and/or water	
☐	☐	Hazardous Waste Generated/Chemical Used	
AD20 Facilities Engineering Department Responsibilities			
☐	☐	Office Space (Location/Sq. Ft. and Duration)	
☐	☐	Conference Room Requirements (Location/Sq. Ft. and Duration)	
☐	☐	Shop and Manufacturing Space (Location/Sq. Ft. and Duration)	
☐	☐	Tech/Lab/Computer Space (Location/Sq. Ft. and Duration)	
☐	☐	Warehouse Space (Location/Sq. Ft. and Duration)	
☐	☐	Test Stand Operations (Duration)	
☐	☐	Liquid Nitrogen (Tons or Dewars {160 Liter})	
☐	☐	Liquid Hydrogen (Tons)	
☐	☐	Liquid Oxygen (Tons or Dewars {160 Liter})	
☐	☐	Gaseous Nitrogen (Million Standard Cubic Feet)	
☐	☐	Gaseous Hydrogen (Million Standard Cubic Feet)	
☐	☐	Gaseous Helium (Million Standard Cubic Feet)	
☐	☐	High Purity Air (Million Standard Cubic Feet)	
☐	☐	Synthesized Air	
☐	☐	Wind Tunnel Air (Million Standard Cubic Feet)	
☐	☐	High Pressure Industrial Water (Duration)	
☐	☐	Valve Lab Support (Duration)	
☐	☐	Calibration Laboratory (Duration)	
☐	☐	Engineering Studies/Design (Anticipated Value)	
☐	☐	Heavy Equipment Operation Support (Number and Duration)	
☐	☐	Facility Modifications (Anticipated Value)	
☐	☐	Utilities Requirements (Off Nominal)	

No	Yes	Requirement (Unit of Measure)	Specify or Reference
AD30 Office of the Chief Information Officer (CIO) Responsibilities			
☐	☐	Telephone (Number/Type/Location)	
☐	☐	Computers (Number/Type/Location)	
☐	☐	Computers Utilization Data Reduction-Mainframe, Mid-range (CPU Hours)	
☐	☐	Facsimile (Number/Type/Location)	
☐	☐	Network Drops (Number/Type/Location)	
☐	☐	Printers (Number/Type)	
☐	☐	Software (Number/Type/Name)	
☐	☐	Radios (Number/Type)	
☐	☐	Pagers (Number/Type)	
☐	☐	Multi-media Services (Type)	
☐	☐	Audio/Video Services (Type)	
☐	☐	Graphics/Reproduction (Anticipated Number)	
AD40 Logistics Services Department Responsibilities			
☐	☐	Equipment Maintenance & Repair (Anticipated Number/Type)	
☐	☐	Furniture Requirements (Office/Specialized)	
☐	☐	Transportation Requirements (Include Special Packaging, etc.)	
☐	☐	Flight Hardware Requirements (Known/Specialized Parts)	
☐	☐	Vehicle Requirements (Temp. Loans/Specialized, e.g. …)	
☐	☐	Program Critical Hardware Moves (Number and Route)	
AD50 Protective Services Department Responsibilities			
☐	☐	Protective Services	

A.5 Customer and Employee Relations Directorate Checklist

No	Yes	Requirement	Specify or Reference
CD02		Plans and Systems Analysis Office	
☐	☐	Workforce Needs (Headcount, FTE impacts)	
☐	☐	Different Skills Requirements	
☐	☐	Mission Services Contract Support	
☐	☐	IPA Assignment Requirements	
CD10		Human Resources Department	
☐	☐	Organization Chart/ Charter Implications	
☐	☐	Union Impacts	
☐	☐	Staffing and Recruiting Requirements	
CD20		Employee and Organizational Development Department	
☐	☐	Organizational Development Needs	
☐	☐	Training and Development Requirements	
☐	☐	Organizational Training Plan Impacts	
☐	☐	Individual Development Plan Implications	
☐	☐	Mentoring Needs	
☐	☐	Cooperative Education Program Requirements	
☐	☐	Electronic Meeting System Needs	
CD30		Technology Transfer Department	
☐	☐	Center Director’s Discretionary Fund Implications	
☐	☐	Customer Agreement Review (See MPG1050.1)	
☐	☐	Technology Commercialization Assessment	
CD40		Internal Relations and Communications Department	
☐	☐	Strategic Planning Implications	
☐	☐	NASA Vision/Mission Statement Implications	
☐	☐	Historical Support/Implications	
☐	☐	MSFC Implementation Plan Implications	
☐	☐	Internal Communication Requirements	
☐	☐	Special Event Coordination/Support	
CD50		Government and Community Relations	
☐	☐	Federal, State, and Local Government Implications	
☐	☐	Advocacy Requirements	
☐	☐	Publications/Public Inquiries	
☐	☐	FOIA (Freedom of Information Act) Requests	
☐	☐	Speaker’s Bureau	
☐	☐	Community Implications	

No	Yes	Requirement	Specify or Reference
CD60		Education Programs Department	
☐	☐	Need for Researchers from Academia	
☐	☐	Need for use of Research Facilities in Academia	
☐	☐	Educational Product Development	
☐	☐	Information Delivery Systems Utilization	
☐	☐	Educational Outreach/Advocacy Implications	

CD70		Media Relation Department	
☐	☐	News Media Outreach Support	
☐	☐	News Media Print Products Requirements	
☐	☐	News Media Interview Support	
☐	☐	News Media Training	
☐	☐	TV/Video Needs	
☐	☐	Press Conferences Support	
☐	☐	Program/Public Exhibits and Models Support	

A.6 Flight Projects Directorate Proposal Check List

No	Yes	Requirement	Specify or Reference
FD02 Advanced Projects Office Responsibilities			
☐	☐	Trade Studies (assumptions, parameters, goals)	
☐	☐	Strategic plans (roadmaps, technology readiness levels, long term goals, future customers)	
☐	☐	Conceptual Designs (mission scenarios, system analysis, performance goals, market analysis)	
☐	☐	Concept and technology points of contact	
☐	☐	Concept or technology history	
☐	☐	Workshops (objectives, products, attendance, dates)	
☐	☐	Proof-of-Principle Prototypes (objective, technology, size, cost, schedule)	
☐	☐	Computer Aided Designs (configuration, dimensions, materials, parts list)	
☐	☐	Web based project information management system (team name, point of contact)	
FD10 Business Management Office			
☐	☐	Has a "bottoms-up" budget and schedule been developed?	
☐	☐	Are adequate cost reserves and schedule slack available to solve problems?	
☐	☐	What type of organization structure will employed? i.e. projectized, matrixed, IPT, etc.	
☐	☐	Is an accountable, responsible person (project lead) identified and in place	
☐	☐	Has earned value been established as a requirement?	
FD20 Flight Systems Department			
☐	☐	Flight systems Development Phases (design, development, test, integration, deployment, operations, sustaining engineering)	
☐	☐	Technical expertise (discipline areas, staffing, and experience)	
☐	☐	Past experience with flight hardware, including an understanding of microgravity and launch/landing requirements	
☐	☐	Maintain facilities for hardware development and test that enhance and or/complement current capabilities	

A.7 Transportation Directorate Proposal Checklist

No	Yes	Requirement	Specify or Reference
TD01 Director's Staff			
☐	☐	Programs and Projects, Management and Systems Engineering	
☐	☐	Risk Management	
☐	☐	Systems Safety Engineering	
TD02 - Business & Administrative Office			
☐	☐	Program Projects Business Management	
☐	☐	Resource Management Systems	
☐	☐	Workforce Planning and Tracking	
TD03 - Integration Office			
☐	☐	Technical Program Integration	
TD10 - Program Planning & Development Office			
☐	☐	Near Term Technology Projects/Demonstrators	
TD15 - Advanced Space Transportation Program (ASTP) Office			
☐	☐	3rd Generation RLV Technology Development (Hypersonics)	
☐	☐	In-Space Transportation Technology Development	
TD30 - Advanced Concepts Department			
☐	☐	Vehicle Concept Design/Development	
☐	☐	Technology Assessment	
☐	☐	Integrated System Analysis Tools (ISAT)	
☐	☐	Vehicle Sizing/Layouts	
☐	☐	Atmospheric Mission Analysis	
☐	☐	Interplanetary Mission Analysis	
☐	☐	Atmospheric/Interplanetary Trajectories	
TD40 - Propulsion Research Center			
☐	☐	Advanced Chemical Propulsion	
☐	☐	In-Space Propulsion	
☐	☐	Nuclear Propulsion	
☐	☐	Fusion Propulsion	
TD50 - Vehicle & Systems Development Department			
☐	☐	Rocket Engine/Motor Systems Engineering	
☐	☐	Propulsion Systems Engineering	
☐	☐	Control Systems Engineering	
☐	☐	Systems Analysis	
☐	☐	Flight Mechanics	
☐	☐	Vehicle Systems Integration	
TD60 - Subsystem & Component Development Department			
☐	☐	Combustion Devices	
☐	☐	Cryogenic And Gas Injectors	
☐	☐	High Pressure Liquid Rocket Engine Turbomachinery	
☐	☐	Low Pressure Liquid Rocket Engine Turbomachinery	
☐	☐	Induced Environments	
☐	☐	Steady and Unsteady Flow Analysis	

No	Yes	Requirement	Specify or Reference
☐	☐	Subscale Vehicle Aerothermal Analysis	
☐	☐	Subscale Vehicle Aerodynamic Analysis	
☐	☐	Vehicle Plumb and Base Heating	
☐	☐	Mechanical and Functional Design of Propellant Components	
☐	☐	Computational and Experimental Fluid Dynamics	
☐	☐	Advanced Propellant Valve Design and Analysis	
☐	☐	Advanced Propellant Duct and Bellows Design and Analysis	
☐	☐	Liquid Rocket Engine Seal and Fastener Design	
☐	☐	Turbine and Pump Flow Modeling	
☐	☐	Subsonic and Supersonic Turbine Modeling	
☐	☐	High Frequency Signal and Data Analysis	
TD70 - Test & Evaluation Department			
☐	☐	Hazardous Ground Test Operations (Propulsion, Cryostructural, and Thermal Vacuum)	
☐	☐	Experimental Fluid Dynamics Test Operations (Aerodynamic Cold Flow & Fluid Dynamic Flow)	
☐	☐	Test Project Management	
☐	☐	Test System Integration	
☐	☐	Test Configuration Setup & Design	
☐	☐	Test Technology Development	

A.8 Systems Management Office Proposal Checklist

No	Yes	Requirement	Specify or Reference
VS10 Systems Engineering Office			
☐	☐	Guidance in project management or systems engineering during formulation	
☐	☐	Independent Assessment, Non_Advocate Review or Independent Annual Reviews	
☐	☐	Systems Engineering overview training	
VS20 Engineering Cost Office			
☐	☐	Life Cycle Cost Estimates	
☐	☐	Cost risk analysis	
☐	☐	Cost benefits studies	
☐	☐	Independent evaluations	

A.9 Science Directorate Proposal Checklist

No	Yes	Requirement	Specify or Reference
SD43		Systems Test Group	
☐	☐	Payload Test Planning	
☐	☐	Breadboard Test Planning and Operations	
☐	☐	Test and Checkout Procedure Development	
☐	☐	Ground Hardware Integration and Test	
☐	☐		
☐	☐	Ground Data Software Development	
☐	☐	Ground Data Acquisition, Processing, and Display	
☐	☐		
☐	☐	Flight Hardware Verification Test	
☐	☐	Flight Hardware Qualification Test	
☐	☐	Flight Hardware Acceptance Test	
☐	☐	Payload Science Timeline Test	
☐	☐	Projects Test Oversight	
☐	☐	Payload Flight Operations Support	
☐	☐	Launch Site Test Support	

A.10 Procurement Office Proposal Checklist

No	Yes	Requirement	Specify or Reference
☐	☐	New work will require contracted support (i.e. a procurement action to be processed by MSFC Procurement)	
☐	☐	Assistance in ensuring contract agreements and methods of acquisition are appropriate for the task	
☐	☐	Selection of contractor team members to partner with NASA in the proposal development effort and/or eventual work performance (if the proposal is successful)	

Appendix B: Cost and Schedule Considerations

- Has a cost/price analysis been performed?
- Is the cost estimate full cost?
- Has a review of guidelines and assumptions used to develop the cost estimate been performed?
- Is there an integrated project schedule?
- Is the schedule resource loaded, logic driven and the critical path identified?
- Is the schedule slack identified?
- Does the schedule agree with the cost phasing?
- Does the schedule agree with the workforce plan?
- Is the skill mix appropriate?
- Are there mechanisms in place to track workforce actuals?
- Are there agreements/commitments to external stakeholders?
- Have the "lessons learned" from comparable previous programs been reviewed by the project team?
- Are there adequate cost and schedule reserves?
- Is there a process to manage reserves?
- Are the integrated facility infrastructure requirements identified?
- Are the tasks reliant on specialized facilities reflected in the project schedule and institutional facility plans?
- Are the institutional requirements included in the cost phasing plan?
- Are institutional requirements approved?
- Does the project cost estimate include the required institutional support contractors?
- Does the project have identified project control resources?